

3.8.10 WASTE MANAGEMENT

This section outlines the major environmental compliance program and ongoing waste management activities for RFETS. Table 3.8.10-1 presents a summary of waste management activities at RFETS for 1995.

The Department is working with Federal and State regulatory authorities to address compliance and cleanup obligations arising from its past operations at RFETS. DOE is engaged in several activities to bring its operations into full regulatory compliance. These activities are set forth in negotiated agreements that contain schedules for achieving compliance with applicable requirements, and financial penalties for nonachievement of agreed-upon milestones.

The focus of the RFETS mission is on environmental restoration and possible economic development. The legal framework establishing the scope and schedule for projects in the environmental restoration program is the Interagency Agreement. The agreement integrates the actions required under the authority and jurisdiction of CERCLA and RCRA. Therefore, the investigative phase at each operable unit is referred to as a RCRA Facility Investigation/Remedial Investigation, and the selection of remedial alternatives is referred to as a Corrective Measures Study/Feasibility Study. The primary objective of the environmental restoration program is to assess and clean up RFETS in compliance with applicable environmental laws and regulations. The approach being taken is to reduce health risk and accelerate cleanup.

There have been, 177 contaminated sites previously identified and prioritized that are located both on RFETS and offsite. These sites were grouped into 16 operable units according to location and type of contamination. Per the new Cleanup Agreement, dated July 19, 1996, DOE, the State of Colorado, and EPA have proposed defining the existing 16 operable units into 7. The primary benefit of consolidating operable units is the reduced process and administrative requirements. The resulting cost saving can then be applied to environmental remediation or other higher priority tasks at RFETS.

Waste disposal activities include the shipment of saltcrete to an offsite commercial facility for disposal, LLW for shipment to NTS and Hanford; the preparation, transportation, and disposal of hazardous and other regulated wastes by commercial vendors; and the disposal of sanitary waste in the onsite landfill. RFETS manages the following waste categories: TRU, low-level, hazardous, mixed, and nonhazardous. A discussion of the waste management operations associated with each of these waste categories follows.

Spent Nuclear Fuel. The RFETS does not generate or manage spent nuclear fuel.

High-Level Waste. The RFETS does not generate or manage HLW.

Transuranic Waste. Transuranic waste at RFETS was generated as a result of Pu operations and its supporting functions such as Pu metal purification. TRU and mixed TRU waste generated at RFETS before 1970 was shipped to INEL and disposed of underground. After 1970, this waste was shipped to INEL for interim storage until a permanent disposal facility became available. As a result of delays in opening WIPP in Carlsbad, New Mexico, the Governor of the State of Idaho placed a moratorium on out-of-State waste shipments to INEL in October 1988, forcing RFETS to store TRU and mixed TRU waste onsite. However, this storage was found to violate RCRA storage provisions and led to several interim agreements.

Storage of TRU and mixed TRU wastes at RFETS is governed by the provisions of the Colorado Department of Health Settlement Agreement and Compliance Order on Consent, Number 89-07-10-01, related to mixed wastes, that was signed on July 14, 1989. The Order required RFETS to submit a Part A Permit Application for all its interim status mixed TRU and mixed LLW storage and treatment units. The Order also granted interim status to all mixed TRU waste units, except unit 60, included in applications filed by July 1, 1988. It also granted interim status to units used for storage and treatment of hazardous and mixed LLW identified in an August 2, 1988, Part A Application.

Table 3.8.10-1. Waste Management Activities at Rocky Flats Environmental Technology Site

Waste Category	1995 Generation ^a		Treatment Capacity (m ³ /yr)	Storage Method	Storage Capacity (m ³)	Disposal Method	Disposal Capacity
	(m ³)	Treatment Method					
Transuranic							
Liquid	<1	Solidification	Included in liquid mixed LLW	None	NA	NA	NA
Solid	54	Compaction	Included in solid mixed LLW	Drums on pads	1,500 ^b	None - WIPP or alternate facility in the future	NA
Transuranic (Mixed)							
Liquid	<1	Solidification	Included in liquid mixed LLW	None	NA	NA	NA
Solid	23	Compaction	Included in solid mixed LLW	Drums on pads	1,300 ^c	None - WIPP or alternate facility in the future	NA
Low-Level							
Liquid	4	Evaporation and Solidification	Included in liquid mixed LLW	Staged	105 ^d	NA	NA
Solid	752	None	None	Staged	4,540 ^d	Offsite - DOE	NA
Hazardous							
Liquid	2	Neutralization & Precipitation	None	Staged in DOT containers	Included in solid hazardous waste	Offsite	NA
Solid	24	None	None	Staged in DOT containers	263 ^e	Offsite	NA
Mixed (Low-Level)							
Liquid	165	Solidification	47,700 ^f	Staged for treatment	Included in solid mixed LLW	None	NA
Solid	676	None	7,100 ^{g,h}	DOT containers	13,600 ⁱ	Offsite	NA
Nonhazardous (Sanitary)							
Liquid	457,600 ^j	Sedimentation	568,000	None	NA	Surface water	NA
Solid	11,400	None	None	None	NA	Onsite landfill	Expandable

Table 3.8.10-1. Waste Management Activities at Rocky Flats Environmental Technology Site—Continued

Waste Category	Treatment					Disposal Method	Disposal Capacity
	1995 Generation ^a (m ³)	Treatment Method	Capacity (m ³ /yr)	Storage Method	Storage Capacity (m ³)		
Nonhazardous (Other)							
Liquid	Included in liquid sanitary	Sedimentation	Included in sanitary	None	NA	Included in sanitary	Included in sanitary
Solid	73	None	None	None	NA	Included in sanitary	Included in sanitary

^a Values per *RFETS Comprehensive Waste Management Plan*

[Text deleted.]

^b Value taken from *Draft Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste*.

[Text deleted.]

^c Value taken from *RFETS Proposed Site Treatment Plan* dated March 1995 and is based on the sum of the current mixed-TRU storage and the expected 20-year generation.

[Text deleted.]

^d Cumulative volume of LLW stored at the end of 1993 as per a memorandum from McGlochin, EG&G to Reece, DOE on updated information for nonnuclear consolidation EA.

[Text deleted.]

^e Value based on the 1991 Waste Storage Inventory Report and the memorandum from McGlochin, EG&G to Reece, DOE on updated information for nonnuclear consolidation EA.

^f Based on the operating capacities of Buildings 374 and 774 as described in the 1995 Mixed Waste Inventory Report.

^g Based on the operating capacities of Building 776 as described in the 1995 Mixed Waste Inventory Report.

^h Value calculated using the conversion ratio of 1,500 kg/m³.

ⁱ Value taken from *RFETS Proposed Site Treatment Plan* dated March 1995 and is based on the mixed-LLW in storage at RFETS.

^j Value taken from *1993 RFETS Site Environmental Report* and Reflects Annual Discharge From Main Collection Pond 68 (Pond A-4).

Note: NA=not applicable.

Source: DOE 1995cc; DOE 1995gg; RF DOE 1995b; RF DOE 1995c; RF EG&G 1992e; RFETS 1995a:1; RFETS 1995a:2; RFP 1993a:1.

Finally, the order set total capacity limit for interim status container storage for mixed TRU waste at 1,220 m³ (1,601 yd³) (RF DOH 1989b:7), yet a capacity exists for 1,500 m³ (1,960 yd³). The *Federal Facility Compliance Act* of 1992 requires DOE to develop site-specific mixed waste treatment plans and to submit the plans to EPA or the authorized State for approval. The final proposed plan was published in March, 1995.

As a temporary solution to the 1,220 m³ (1,601 yd³) limit, the Supercompaction and Repackaging Facility in Building 776 is used to compact and package solid TRU and mixed TRU wastes generated during various site operations. This facility processes both soft, combustible waste (such as paper and plastic) and hard, noncombustible waste (such as metal and glass). Supercompaction and Repackaging Facility equipment is contained in a single, large glovebox. The Supercompaction and Repackaging Facility allows repackaging operations to be performed inside the glovebox, reducing exposure to workers. An overall 5-to-1 volume reduction of waste by this facility is being achieved.

Residues at RFETS are Pu recovery byproducts (for example, salts and contaminated materials) that were determined to contain enough Pu to justify further processing for recovery. In the past, DOE has not considered residues at RFETS to be a waste form. Events at RFETS have led to the classification of these Pu residues as waste. A very limited quantity of the Pu residues at RFETS are considered to be mixed waste based upon a court judgement. These mixed residues have been managed under a series of compliance orders, agreements, settlements, and judicial orders.

The need to treat mixed TRU waste is being assessed as part of the WIPP test phase. If the no-migration exemption for WIPP is granted, mixed TRU wastes going to WIPP would only need to meet hazardous substance transportation requirements and WIPP WAC before shipment. If not approved, then treatment of mixed TRU waste would be required under 40 CFR 191 (disposal standards) to remove or reduce to acceptable levels the land disposal restriction constituents in the waste before shipment and disposal.

Low-Level Waste. The baler located in Building 889 processes solid LLW (soft combustibles) generated outside the PA. The baler is also being evaluated for volume-reducing beryllium and mixed LLW generated outside the PA, but some or all of the following improvements will be required in order to meet the following applicable requirements: equipment must be upgraded and rearranged; ventilation must be upgraded; and building modifications must be made to meet safety requirements.

Mixed Low-Level Waste. A great deal of the solid radioactive waste at RFETS consists of mixed LLW. Mixed LLW shipments to NTS were suspended in May 1990 when the RCRA LDR went into effect. In order to transport and receive wastes, NTS has to meet certain regulatory requirements. They must be either adequately characterized or treated to prove that hazardous constituents in these wastes are below treatment standards.

The Department and EPA entered into an FFCA for LDR wastes on May 20, 1991. This agreement requires DOE to submit the following: a Comprehensive Treatment and Management Plan addressing treatment proposed for RFETS nonresidue mixed wastes so as to come into compliance with the treatment and storage requirements of RCRA; a Waste Minimization Plan identifying process changes proposed to minimize or eliminate wastes; and an Annual Progress Report evaluating Rocky Flats' progress in achieving compliance with the RCRA LDR.

Negotiations began in June 1992 for a new agreement (FFCA). However, the intervening FFCA and its requirement for a site treatment plan compliance order will most likely obviate the need for an FFCA. Pending any new agreement, DOE will continue to manage its mixed waste compliance program in accordance with the existing FFCA. For example, the Waste Minimization Program Plan, Waste Stream and Residue Identification and Characterization Report, and the Annual Progress Report continue to be updated and submitted on an annual basis. However, because the FFCA gives the State primacy in approval of the site treatment plan and issuance of a compliance order, Colorado Department of Health is now considered the lead regulatory agency in regard to the DOE mixed waste compliance program. Current plans call for the disposal of saltcrete at Envirocare of

Utah. Disposal of saltcrete is planned in a proposed RCRA Subtitle C disposal cell. The remaining mixed LLW will either be disposed of at commercial facilities or at NTS.

Residues are process byproducts that contain radioactive materials in concentrations greater than the economic discard limit, and were destined for recycle to recover the radioactive materials. Those residues that contain hazardous constituents are undergoing characterization to determine how to comply with RCRA and court orders. DOE is presently determining how and where to store those residues it decides to retain. It is planned to remove all mixed residues by 1999.

The Department and the State signed the Residue Compliance Agreement and Consent Order on November 3, 1989, which requires DOE to submit a plan for removing all mixed residue inventory at RFETS by January 1, 1999. Also, the U.S. District Court, Colorado, issued a Judgment and Order on August 13, 1991, which declared that RFETS mixed residues were hazardous materials and must be managed in accordance with RCRA and further ordered that DOE must obtain a permit for the mixed residues currently stored without a RCRA permit. If no such permit is obtained, RFETS may not continue operations which generate hazardous or mixed waste, save certain limited exceptions.

The plan for removal of mixed residues from RFETS contains four primary ways of dealing with these residues: ship as waste or product, remove the RCRA characteristic, remove actinides and ship the resultant wastes, and remove stored solutions (RF DOE 1992a:8). All of the Pu-bearing residues in the backlog will undergo inspection and segregation so that the particular process path to be used can be identified or verified.

[Text deleted.]

Hazardous Waste. Treatment of hazardous wastes at RFETS is limited to organic liquid wastes. Hazardous wastes are shipped to various RCRA-permitted, commercial vendors for disposal. In 1991, DOE and the Colorado Department of Health agreed on radioactivity limits for waste garage oils; this waste form is now being shipped to a commercial vendor for recycle.

Nonhazardous Waste. The DOE and EPA agreed to, and signed on March 25, 1991, an *Federal Facility Compliance Act* for the NPDES program. The agreement requires the following actions:

- Upgrade the sewage treatment plant and change sewer sludge and spray irrigation management practices
- Enhance groundwater monitoring for the sewage sludge drying beds
- Prepare a compliance plan describing those actions necessary for the RFETS to remain in compliance with the NPDES permit
- Submit to EPA a variety of new reports and studies describing the status of compliance

The sanitary landfill on RFETS accepts all solid nonhazardous wastes. Liquid nonhazardous waste is treated and released to surface waters.